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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/552,197  | 07/05/2006  | Sungho Jin           | 15977-29            | 6489             |
| 28221 7590 11/20/2009<br>PATENT DOCKET ADMINISTRATOR<br>LOWENSTEIN SANDLER PC<br>65 LIVINGSTON AVENUE<br>ROSELAND, NJ 07068 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| VAN, LUAN V   |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 1795  |             |                      |                     |                  |
| MAIL DATE   |             | DELIVERY MODE        |                     |                  |
| 11/20/2009  |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/552,197

**Applicant(s)**

JIN, SUNGHO

**Examiner**

LUAN V. VAN

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 10-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S&C)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date October 6, 2009

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of claims 1-9 in the reply filed on September 18, 2009 is acknowledged. Claims 10-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

### ***Claim Status***

Claims 1-9 are pending in the present application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hunter et al. (US 5641391).

Regarding claim 1, Hunter et al. teaches a method of patterning a surface of a substrate comprising the steps of: providing the substrate 10 (Fig. 1); covering at least a portion of the surface with an electrolyte 12; disposing at least one nanoscale electrode 11 in the electrolyte adjacent the surface; and applying a current between the electrode and the substrate to electrolytically deposit material on or remove material from the substrate surface (column 6 lines 55-58). The applicant, on page 4, lines 20-22 of the

applicant's specification, defines nanoscale as a dimension less than 500 nm. Since the electrode of Hunter et al. has a tip diameter between 5-200,000 nm (column 5 lines 15-16), the electrode is a nanoscale electrode.

Regarding claims 2 and 3, Hunter et al. teaches wherein the covering comprises immersing the substrate in an electrolyte bath (column 6 lines 61-64). Further addressing claim 3, the examiner takes the position that immersing the substrate in the plating solution broadly reads on coating a layer of electrolyte to the surface.

Regarding claim 4, Hunter et al. teaches moving the electrode to write a pattern (column 5 lines 58-65).

Regarding claim 5, Hunter et al. teaches wherein the nanoscale electrode comprises a nanowire (column 5 lines 15-16).

Regarding claim 6, Hunter et al. teaches wherein at the least one nanoscale electrode comprises a plurality of nanowires or nanotubes disposed in a pattern or in a spaced-apart array (column 5 lines 23-26).

Regarding claim 7, Hunter et al. teaches wherein the substrate comprises metals, alloys, semiconductors or polymers (column 5 lines 12-14).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter et al. in view of Li et al. (US 6831017).

Hunter et al. teaches the method as described above. In addition, Hunter et al. teaches that it is known to insulate the electrode (column 8 lines 4-21). However, Hunter et al. differs from the instant claims in that the reference does not explicitly teach embedding the plurality of nanowires in an insulating material.

Li et al. teaches forming a layer insulating material 20 (Fig. 2) on a plurality of nanowires 18 in order to electrically insulate the nanowires from each other, to provide additional structural support for the nanowires, and to seal all or at least a portion of the nanowires from the environment (column 6 lines 35-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have embedded the plurality of nanowires, as taught by Li et al., in the method of Hunter et al., because it would electrically insulate the nanowires from each other, to provide additional structural support for the nanowires, and to seal all or at least a portion of the nanowires from the environment (column 6 lines 35-42 of Li et al.).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUAN V. VAN whose telephone number is (571)272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luan V Van/  
Examiner, Art Unit 1795  
November 18, 2009